REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application.

Claims 1-13 are now present in this application. Claim 1 is independent.

Amendments have been made to the Abstract of the Disclosure and the Specification. No new matter is involved. Reconsideration of this application, as amended, is respectfully requested.

Objection to the Abstract of the Disclosure

The Examiner has objected to the Abstract of the Disclosure because of the use of the word "disclosed."

In order to overcome this objection, Applicants have amended the Abstract of the Disclosure to delete the objected-to language. Accordingly, reconsideration and withdrawal of this objection are respectfully requested.

Objection to the Specification

The specification is objected to for lack of clarity. Applicants respectfully traverse this objection by amending the specification in order to make the specification clearer. No new matter is involved. Paragraphs [0004], [0008], [0068], [0080] and [0081] have been amended. Paragraphs [0004], [0068] and

[0080] have been amended to make them more grammatically correct. Paragraph [0008] has been amended with the Examiner's suggested language, and paragraph [0081] has been amended to clarify what is meant by "one thousand times."

Rejection Under 35 U.S.C. § 112, 2nd Paragraph

Claim 5 is rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential elements, citing MPEP §2172.01. The Office Action alleges that the omitted element is the element that enables the sensor unit to combine the magnetic field from a second feedback coil with the output of the SQUID signal.

This rejection is respectfully traversed.

Claims are considered to be definite, as required by the second paragraph of 35 U.S.C. §112, when they define the metes and bounds of a claimed invention with a reasonable degree of precision and particularity. See In re Venezia, 530 F.2d 956, 958, 189 USPQ 149, 151 (CCPA 1976). In that case the court did not require Venezia's claims to recite his elements as being interconnected. Applicant's claims recite a slot feature structure, and only need to recite those elements which distinguish the invention from the prior art. The definiteness of claim language is analyzed, not in a vacuum, but always in light of the teachings of the prior art and of the particular application

disclosure as it would be interpreted by one possessing ordinary skill in the pertinent art, In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971). Furthermore, the Applicant may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought. See in this regard, In re Swinehart, 439 F.2d 210, 160 226 (CCPA 1971).

The recitation in the claims of the various recited elements is clear, and one of ordinary skill in the art can readily determine the metes and bounds of the invention without any further recitations.

The test for compliance with the second paragraph of 35 U.S.C. §112, as stated in Miles Lab., Inc. v. Shandon Inc., 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993), cert. denied, 510 U.S. 1100 (1994) is whether one skilled in the art would understand the bounds of the claims when read in light of the specification. If the claims, read in light of the specification, reasonably apprise those skilled in the art of the scope of the invention, Section 112 demands no more. See, also, In re Merat, 519 F.2d 1390, 1396, 186 USPQ 471, 476 (CCPA 1975), which stated that the question under Section 112, second paragraph is whether the claim language, when read by a person of ordinary skill in the art in light of the specification, describes the subject matter with sufficient precision that the bonds of the claimed subject matter

are distinct. See, also, In re Warmerdam, 33 F3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994).

The second paragraph of 35 U.S.C. § 112 requires claims to be set out and circumscribe a particular area with a reasonable degree of precision and particularity, In re Johnson, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977).

All of Applicant's claims, including rejected claim 5, satisfy these requirements.

Moreover, the case cited in MPEP §2172.01 (on which this rejection is based) to require inclusion of essential structural cooperative relationships, In re Mayhew, 188 USPQ 356 (CCPA 1976), has been severely limited by the decisions of the Federal Circuit regarding the very similar Gentry Gallery case, cited below.

This Application is unlike the application in Gentry Gallery, Inc. v. Berkline Corp., 43 USPQ2d 1498 (Fed. Cir. 1998) in which the court's determination that the patent disclosure did not support a broad meaning for the disputed claim was premised on clear statements in the written description that described the location of a claim element - the "control means" - as "the only possible location" and that variations were "outside the stated purpose of the invention", Id. at 1503. The Federal Circuit subsequently held, in Johnson Worldwide Associates Inc. v., Zebco Corp., 50 USPQ2d 1607 (Fed. Cir. 1999)

that Gentry Gallery considers the situation where the patent's disclosure makes it crystal clear that a particular (i.e., narrow) understanding of a claim term is an "essential element of [the inventor's] invention." Applicant submits that this decision also limited the applicability of the In re Mayhew decision.

In this regard, Applicant's disclosure never states, or otherwise admits, that any particular feature is an essential element of the invention. Absent such an admission, there is no statutory basis to make the requirements set forth in this rejection under 35 U.S.C. §112. Accordingly, the rejection of claim 9 is improper and should be withdrawn.

Applicant respectfully submits that reciting a separate element that enables the sensor to combine the magnetic field from a second feedback coil with the output of the SQUID signal, as requested, will not clarify the metes and bounds of the claims, which are clear already.

Reconsideration and withdrawal of this rejection of claim 5 is respectfully requested.

Rejection Under 35 U.S.C. § 102

Claims 1, 2 and 5-11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 6,339,328 to Keene et al. ("Keene"). This rejection is respectfully traversed.

A complete discussion of the Examiner's rejection is set forth in the Office Action, and is not being repeated here.

A prior art reference anticipates the subject of a claim when the reference discloses every feature of the claimed invention, either explicitly or inherently (see, In re Paulsen, 30 F.3d 1475, 1478, 1479, 31 USPQ2d 1671, 1675 (Fed. Cir. 1994), In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990), Hazani v. Int'l Trade Comm'n, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997) and RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

Moreover, it is well settled that a rejection must be based on objective evidence of record, not merely conclusionary statements of the Examiner. See, *In re Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

During patent examination the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

If the U.S. Patent and Trademark Office fails to meet this burden, then the Applicant is entitled to the patent.

Applicants respectfully submit that the PTO has failed to meet this burden.

Claims 1, 2 and 5-11 positively recite a combination of features including an auxiliary sensor having a lower magnetic sensitivity and a higher operating range than the SQUID sensing unit.

The Office Action never addresses this positively recited feature. In fact, the Office Action never even mentions "an auxiliary sensor having a lower magnetic sensitivity and a higher operating range than the SQUID sensing unit."

By failing to address this positively recited feature, the rejection of claims 1, 2 and 5-11 is fatally defective.

Furthermore, Applicants are unable to find this positively recited feature in Keene, either explicitly or inherently.

Under the doctrine of inherency, if an element is not expressly disclosed in a prior art reference, the reference will still be deemed to anticipate a subsequent claim if the missing element "is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Cont'l Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherent anticipation requires that the missing descriptive material is 'necessarily present,' not merely probably or possibly present, in the prior art." Trintec Indus., Inc. v. Top-U.S.A. Corp., 295 F.3d 1292, 1295, 63 USPQ2d 1597, 1599 (Fed. Cir. 2002) (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)).

There can be no speculation or only possibilities involved in a holding of inherency. What is alleged to be inherent must necessarily occur. The mere fact that something *may* result from a given set of circumstances is not sufficient. *In re Oelrich*, 212 USPQ 323, 326 (CCPA 1991).

> Inherent anticipation requires that the missing descriptive material is 'necessarily present,' not merely probably or possibly present, in the prior art.' *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295, 63 USPQ2d 1597, 1599 (Fed. Cir. 2002) (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)).

Applicants' review of Keene indicates that Keene never mentions any difference between the sensitivities of its SQUID sensors, e.g., sensors 25a and 25b.

Moreover, while Keene indicates that magnetometers 25a. 25b are represented as SQUID magnetometers, other magnetometer devices may be used, for example, flux gate, Hall probe sensors, or magneto-resistive devices – see col. 6, lines 19-22, and col. 11, lines 54-58, there is no teaching in Keene that one sensor can be one type of magnetometer device and the other sensor can be a different type of magnetometer device.

Any assertion that a first magnetic sensor is a SQUID type device and an auxiliary magnetic sensor is a flux gate type device is speculation unsupported by objective factual evidence in Keene.

Applicants contend that any disclosure in Keene of a fluxgate as the auxiliary sensor is only in the context of the other sensor being a flux gate sensor also.

Furthermore, Keene does not operate the SQUID sending unit and the auxiliary sensor to read out a signal of the SQUID, as recited. Instead of doing what is recited, Keene separately operates sensor 25a to read out signals of sensor 25a and separately operates sensor 25b to read out signals of sensor 25b.

Accordingly, Applicants respectfully submit that Keene does not anticipate the invention recited in claims 1, 2 and 5-11.

With respect to claims 2 and 6, Applicants respectfully submit that Keene does not provide a combined magnetic field from the SQUID driving unit and the auxiliary sensor driving unit from a combining unit. It is clear from an inspection of Keene's Fig. 5, that the output of the combining unit 31 is sent to both the ASPA and to the global feedback coils 30a and 30b. This does not anticipate claim 2, which positively recites that the first combining unit supplies the SQUID sensing unit with combined magnetic field as the offset magnetic field through the first feedback coil.

With respect to claim 7, Applicants respectfully submit that Keene does not disclose a second combiner to output a noise-eliminated signal, as recited.

All that Keene discloses is the use of two sets of nested feedback loops to achieve low noise and fine resolution for the purposes of measuring field gradient, while providing sufficient dynamic range in an outer global feedback loop to handle the earth's magnetic field - see col. Col. 12, lines 6-10 of Keene. Keene's ASPA is simply not disclosed, either explicitly or inherently, as a second combiner to output a noise eliminated signal.

With respect to claims 8 and 9, the Office Action relies on a large portion of Keene, namely from col. 7, line 66 to col. 8, line 67, to allegedly disclose a second combiner allowing signals from the SQUID and auxiliary sensors in a predetermined ratio to eliminate noise in the signal.

Applicant can find no mention in Keene of "ratio" or of a second combiner to output a noise eliminated signal, and the Office Action does not point out specific words in the two-plus columns of Keene relied on that disclose such features, either explicitly or inherently. Moreover, the Office Action merely speculates about the existence of the ratio recited in claim 9 being disclosed in Keene, rather than providing objective factual evidence of its existence in Keene. This is improper.

With respect to claim 10, as pointed out above, Keene does not disclose an auxiliary sensor of a different type than the SQUID sensor, so the allegation that

Keene discloses a flux gate pick-up coil as a secondary sensor with a SQUID sensor is based on speculation and not on objective factual evidence that Keene explicitly or inherently discloses such a feature.

Accordingly, this rejection of claims 1, 2 and 5-11 is improper and should be withdrawn.

Rejections under 35 U.S.C. § 103

Claims 12 and 13 stand rejected under 35 U.S.C. §103(a) as unpatentable over Keene in view of U.S. Patent 5,343,707 to Sata. This rejection is respectfully traversed.

Keene admittedly does not disclose the features of a refrigeration unit to cool SQUID sensors. To remedy this defect, the Office Action turns to Sata, which discloses a cyclic noise removing system for a magnetic sensor. Sata's SQUID gradiometer B includes a SQUID 31 and magnetic flux input circuitry 32 disposed on a final cooling stage of a cryogenic refrigerator that includes plural cooling stages. The magnetic flux input circuitry includes a pickup coil 33 having four loops and being wound in a loop shape to a cylindrical bobbin 34. See col. 9, lines 1-15, for example.

The Office Action concludes that, because Keene teaches an axial configuration for its sensors, in col. 6, lines 23-32, the SQUID sensor would be

nearer the object to be tested while the auxiliary sensor would be axially away from the object to be tested and nearer the motor assembly.

Applicants respectfully disagree with this conclusion.

Fig. 3 of Keene, which is relied on in this rejection, clearly discloses the SQUID 31 close to the refrigeration circuitry 4, while the SQUID gradiometer pickup coil 33 is clearly located farther away from the refrigeration circuitry than SQUID 31 and adjacent the person M to be tested.

Thus, if Keene were modified by Sata to provide a refrigeration unit with a motor, the resulting reference combination would result in a configuration that is just the opposite of the claimed configuration, i.e., one in which the SQUID sensor would be nearer the refrigerator and farther away from the object to be tested than the auxiliary coil.

Accordingly, the Office Action fails to make out a *prima* facie case that the proposed modification of Keene in view of Sata would result in, or render obvious, the claimed invention.

Withdrawal of this rejection of claims 12 and 13 is respectfully requested.

Allowable Subject Matter

Applicants acknowledge with appreciation the indication that claims 3 and 4 contain allowable subject matter. However, because Applicants believe that

claim 1, from which claims 3 and 4 depend, is allowable over the applied art, Applicants have not re-written claims 3 and 4 in independent form.

Additional Cited References

Because the remaining references cited by the Examiner have not been utilized to reject the claims, but have merely been cited to show the state of the art, no comment need be made with respect thereto.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert J. Webster, Registration No. 46,472, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Abstract of the Disclosure